Davis County Soil Dioxin Study

Project Purpose

Develop a registry of soil dioxin levels in Davis County and use that information to compare with a soil dioxin study done in the Denver area.

Background

Funding came from a settlement between Wasatch Energy Systems (WES) and the Utah Division of Air Quality for outstanding Notices of Violation. The study was developed in conjunction with scientists from the Division of Air Quality, Davis County Health, the University of Utah, and WES.

Because Colorado and Utah are similar in many aspects, the study was patterned after one conducted by EPA in the Denver area. This presented a two-fold benefit: First, the group was able to use protocol that had already been developed and second, the group had measuring stick that could be used to interpret their results.

How the Study Was Structured

The Denver study looked at five land use categories: residential, industrial, commercial, open space, and agricultural. Because the Davis County project budget was limited, the group targeted residential properties. Twenty-two soil samples were taken at sites evenly distributed over the county. Locations were selected using a statistically validated pattern. This allowed the conclusions about the county in general to be reached with a high degree of accuracy. In addition, locations around WES were specifically targeted in order to answer questions raised by citizens in that area.

EPA sampling methods were duplicated. Soils were collected at a depth of 0-2 inches from relatively natural, undisturbed areas and away from potential contamination sources not related to this investigation (ex - railroad ties, residential shops and garages, industrial facilities). Locations that were easily accessible and could be readily identified by such things as proximity to semi-permanent physical features were selected and documented using a GPS - Global Positioning System.

A clean, stainless steel trowel was used to grab each sample. The sample was then placed in a clean glass jar, labeled, and stored in a cooler with ice. Two jars were filled at each location so random samples could be chosen for duplicates used in quality control. All samples were analyzed by an EPA-certified lab.

What the Study Showed

In a nutshell, the study showed that the soil dioxin levels in Davis County are below the levels seen in the Denver study and well below both ATSDR levels for screening and health based action levels.

Summary Statistics
Table I

Data Set	**Observation** (***# of samples***)	**Range** (***Highest and lowest result - see health-based comparison below***)	**Geometric Mean** (***Average concentration of all samples***)	**95% Confidence Level** (***Ranges do not overlap***)
Davis Co	22	0.323-4.466	0.998	0.711-1.402.
Denver	38	0.213 - 42.88	3.248	2.158-4.889

Table II

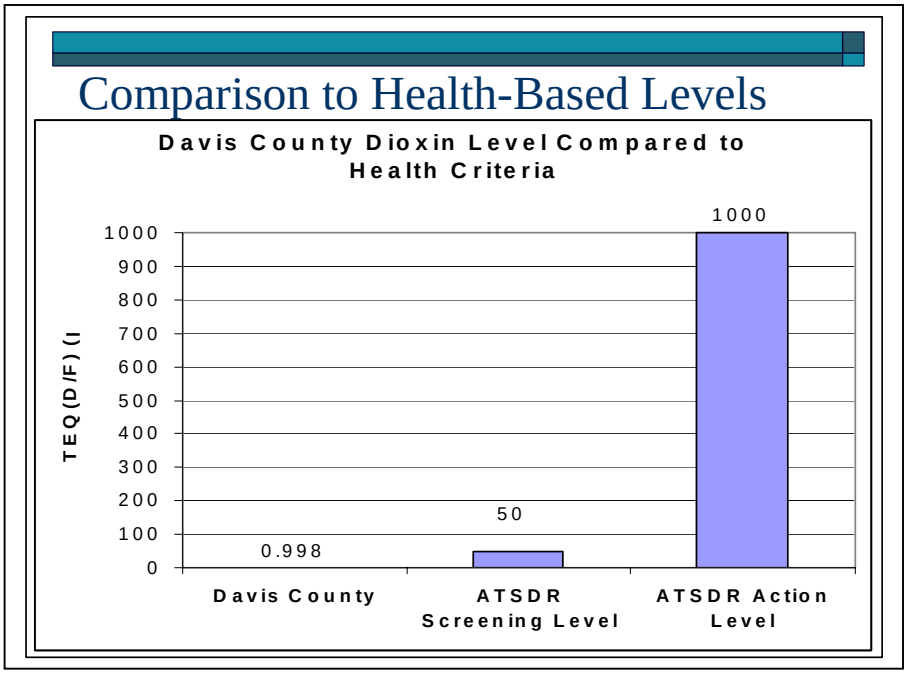

Table II, shows that the dioxin levels found in Davis County are well below levels of concern.

ATSDR Action Level is the health based level, set by the Center for Disease Control, at which action should be taken to remove a pollutant from the environment to protect human health.

The ATSDR Screening Level is used to indicate when additional testing may be considered

The Davis County number shows the mean or average of soil levels taken

About Dioxin

Dioxins are a family of chemicals that are created as a result of combustion, metals processing, chemical manufacturing, paper processing and volcanic eruptions. Some are broken down in sunlight, some evaporate to air, but most attach to soil and to bottom sediment in water and stay in place. As a result, concentrations may build up in the food chain and result in measurable levels in animals. People who have a short-term exposure to high levels may experience skin lesions and altered the liver function. Long-term exposure can impair the immune and endocrine systems, reproductive functions, and the developing nervous system. Dioxins are also a known carcinogen.

More Information

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